

THE CHICKEN BUSINESS IN CALIFORNIA

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The Chicken Business

IN CALIFORNIA . . .

. . . either for egg production or chicken meat production, is a very intensive enterprise. A large number of birds are raised in a small area and are fed purchased feed. Most production is on specialized poultry farms, but equally intensive methods are used when the enterprise is operated as a side line.

MANY PEOPLE enter the chicken business each year and many fail, but some poultrymen continue in business and make a good living over the years. The margin between income and costs is small. Efficiency of production must be high to yield a satisfactory income.

THIS CIRCULAR endeavors to answer the question: "What is the best I should expect from my chicken business?"—a question asked by both beginner and established farmer. The answer is based largely on poultry management studies carried on for the last ten years. Averages of many enterprises are given. They indicate in part that

- Profit cycles operate in the poultry business
- Some types of poultry enterprise are generally more profitable than others
- The size of business and the farm layout should be planned with a desired income in mind.

Averages of inputs and costs are given which will help you compare your business with others, and perhaps suggest places to improve efficiency.

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Profit Opportunities

Profit Cycles

California, with its large and growing nonfarm population, furnishes a market for more eggs and poultry than are produced in the state. The long-time outlook for the chicken business is fairly good. But production can quickly expand, or consumer purchasing power can decline, to a point where prices are depressed and only the best operators can make a living. Under low prices, many fail and production is reduced. With the smaller supply, prices improve and the business becomes profitable again. These profit cycles are short, usually about three years from good year to good year. But the depression from 1931 to 1933 resulted in almost six years of low earnings. The war and post-war period has brought good earnings the last seven years.

The beginner would do well to start in a low-profit year with a better one to follow. However, he can start at any time if he is financially prepared to weather a brief period of no profits. As this is writ-

ten in late 1948, we are in a profitable period for California poultrymen. The year 1949 may still be fairly good; but if history repeats, prices as well as profits are likely to be down in 1950. That would be a better time to buy in—places will be for sale and at lower prices. Profit should again improve by 1951 or 1952 unless we have a considerable decline in consumer purchasing power.

Outlook

Successful operators in the chicken business continuously watch egg, poultry meat, and feed prices immediately ahead. The feed-egg ratio and the feed-poultry ratio indicate what to expect in the way of profit opportunities.

The *feed-egg ratio* is the main figure to watch where the chief interest is in an egg enterprise. The feed-egg ratio is the price of one dozen eggs divided into the cost of 100 pounds of feed, or the dozens of eggs necessary to pay for 100 pounds of poultry feed (half grain and half

Table 1. CALIFORNIA CHICKENS, EGGS, PRICES AND COST RATIOS

	Hens and pullets, January 1	Eggs produced	Price per dozen eggs	Feed cost per cwt.	Feed-egg ratio	Total chickens raised	Average price per pound, fryers*	Feed-poultry ratio
	thousands	millions	cents	dollars	dozens	thousands	cents	pounds
1938.....	14,698	1,778	23.9	1.70	7.1	24,700	18.2	9.3
1939.....	13,589	1,661	21.6	1.69	7.8	27,638	16.4	10.3
1940.....	14,262	1,761	20.3	1.85	9.1	27,474	17.5	10.6
1941.....	13,665	1,743	27.8	2.08	7.5	33,628	18.3	11.4
1942.....	15,784	2,001	34.0	2.42	7.1	36,958	26.0	9.3
1943.....	16,558	2,225	42.2	2.88	6.8	45,702	30.0	9.6
1944.....	18,502	2,538	37.6	3.20	8.5	36,203	30.0	10.7
1945.....	16,377	2,302	43.4	3.17	7.3	48,640	30.0	10.6
1946.....	17,512	2,345	44.8	3.78	8.4	35,109	34.0	11.1
1947.....	16,310	2,389	53.5	4.49	8.4	39,821	36.0	12.5

Source: California Crop and Livestock Reporting Service, Calif. Annual Poultry Hatchery Report, Summary for 1947.

* Fryers of heavy and cross breeds of around three pounds. These are called broilers in eastern states and in government reports.

Table 2. POULTRY MANAGEMENT STUDY RECORD AVERAGES, 1938-1947

Record year	Average number hens per flock	Per cent of hens		Eggs		Feed		Hours of labor per hen	Net stock income per hen	Total income	Total cost	Management income	Farm income
		Died and lost	Culled and sold	Number laid per hen	Price per dozen, cents	Pounds per hen	Cost per cwt., dollars						
Commercial Egg Flocks													
1938	1,339	20.9	60.7	164	23.9	109	1.73	2.1	.17	3.81	3.11	.70	1.36
1939	1,451	20.1	68.3	174	20.5	110	1.65	2.0	.18	3.42	2.97	.45	1.03
1940	1,767	20.8	60.9	178	20.5	110	1.65	1.8	.11	3.41	2.91	.50	1.03
1941	1,795	18.7	63.1	174	28.2	115	1.89	1.9	.27	4.68	3.45	1.23	1.80
1942	2,000	18.7	65.2	175	35.2	115	2.23	1.8	.26	5.69	4.11	1.58	2.33
1943	2,328	17.5	76.2	176	41.5	115	2.52	1.9	.39	6.86	4.62	2.24	3.00
1944	2,427	18.8	83.3	183	38.6	119	2.88	1.8	.43	6.75	5.33	1.42	2.25
1945	2,401	16.1	81.1	179	42.6	120	2.94	1.7	.60	7.48	5.55	1.93	2.78
1946	2,406	14.6	89.1	166	44.8	118	3.64	1.6	.43	7.11	6.45	.66	1.52
1947	2,185	15.5	76.7	187	53.1	123	4.22	1.7	.44	9.26	7.49	1.77	2.81
10-year average	1,928	18.2	71.7	176	34.8	115	2.55	1.8	.32	5.84	4.56	1.28	2.02
Combined Egg and Meat Flocks													
1938	583	16.7	87.3	172	24.9	172	1.86	4.0	2.05	6.69	5.45	1.24	2.66
1939	724	24.0	93.9	170	20.6	181	1.80	4.1	2.02	5.78	5.53	.25	1.60
1940	1,114	22.8	69.3	157	21.0	166	1.74	3.7	1.53	4.80	4.78	.02	1.08
1941	1,178	26.2	80.6	181	28.4	162	2.03	3.7	1.65	6.42	5.35	1.07	2.03
1942	1,062	28.1	73.9	168	34.3	148	2.32	3.5	1.72	7.26	5.68	1.58	2.79
1943	535	22.3	93.2	165	43.3	184	2.74	3.9	4.00	10.25	8.49	1.76	3.79
1944	783	29.2	100.9	175	37.4	182	3.23	2.9	2.90	9.02	9.10	-.08	1.93
1945	554	20.4	185.5	187	48.3	240	3.26	3.8	6.50	14.77	12.86	1.91	4.55
1946	1,056	24.4	102.6	192	45.9	189	3.61	2.1	2.30	10.27	9.58	.69	2.26
1947	1,110	16.0	84.9	197	56.9	187	4.27	1.9	3.43	13.53	10.97	2.56	4.49
10-year average	879	23.8	94.3	177	37.5	179	2.80	3.2	2.63	8.77	7.73	1.04	2.59

Source: Poultry Management Studies are based on detailed records provided by poultrymen and compiled by local offices of the Agricultural Extension Service in several counties. Above figures represent averages of 89 egg flock records, and eight combined egg and meat flock records, for the ten years.

mash). When this ratio is low, as it was in 1943 (6.8), the production of eggs is relatively profitable; but when this ratio is high, as it was in 1940 (9.1), there is not so much profit. This may be seen in table 2, which shows earnings on actual poultry farms.

The *feed-poultry ratio* is the figure to be watched by the producer of poultry meat. This ratio is the price per pound of fryers (broilers) divided into the cost of 100 pounds of feed. The smaller the number of pounds of poultry required to

pay for 100 pounds of feed, the larger the profit margin.

If the outlook is good, it may be wise to go ahead with larger business and personal outlays. If poor, all but essential business expenditures should be curtailed during the bad period. Generally, it will pay to operate to comfortable capacity in good times or bad as long as income is a little above costs. But when egg and poultry checks will not pay feed costs and other bills, it may be better to curtail or liquidate.

Three Types of Chicken Enterprises

In farming we consider an enterprise as one crop or one kind of livestock or poultry raised for profit. A single enterprise may be the entire business of a specialized farmer, or only one of several for the diversified farmer. A poultry enterprise may be the farmer's entire farm business, as on the specialized poultry farm, or it may be carried on in connection with an orchard, grain or general farm.

There are three main types of commercial chicken enterprises in California:

Egg Production

Egg and Meat Production

Chicken Meat Production

Breeding and hatchery enterprises are not numerous but they are important as a source of the baby chicks for profitable commercial production. Since a high degree of technical ability and considerable experience and capital are required to run a breeding farm and hatchery, these enterprises are not suited to the beginner.

Egg Enterprises

The egg-producing enterprise in California consists mainly of the keeping of hens, usually of the White Leghorn breed, for market egg production. Occasionally part of the flock may be used in the spring for the production of hatching eggs. Some meat is produced as a by-product through

the raising of replacements and sale of cull hens but market eggs are the main product. The first section of table 2 shows averages for about 89 commercial egg records for 10 years.

Size. Egg flocks on which records were obtained had an average size of 1,928 hens over the ten years. Some were as small as a few hundred, and some as large as 12,000 hens. The average number died and lost during a year was 18.2 per cent, or about 350 hens annually in a flock of 1,928 hens. Notice that this per cent has declined slightly in recent years. Notice also that the number culled and sold has been increasing and averaged over 70 per cent. This means that about 90 per cent of the average number of hens go out of the flock each year, from deaths and culling, and must be replaced by new layers.

Production. Egg production per hen shows a slight recent upward trend, and for the ten years averaged 176 eggs, or 14.6 dozen eggs.

Earnings. Earnings are shown in two ways in table 2. Management income is the amount by which total income exceeds total costs, with the latter including the value of the operator's own labor and interest on the total investment at 5 per cent. Farm income is the amount by which income exceeds cash costs and depreciation. It is the amount the operator

receives from his business for his management, labor, and invested capital. It is the amount he has left for living and debt retirement.

Farm income for the egg flocks varied from a low of \$1.03 per hen in 1939 and 1940 to a high of \$3 in 1943, and averaged \$2.02 per hen. This ten-year period (1938–1947) was a profitable one with high consumer purchasing power. The previous ten years (not shown in this table) were not as good: a high in 1929 of \$1.69, a low in 1933 of \$0.44 and an average farm income for the ten years (1928–1937) of \$0.99 per hen.

Combined Egg and Meat Enterprises

The combined egg and meat enterprise is composed of a laying flock, sometimes of the heavy dual-purpose breeds, and considerable production of broilers and fryers for meat. The second section of table 2 shows averages for about eight records on this type of enterprise over the last ten years. In the combination flocks, egg production represented about two thirds of the business and meat production one third, although this may vary from flock to flock and year to year.

Size. The average number of hens per flock was smaller as compared to the egg flocks, but the *net stock income* per hen was larger: an average of \$2.63 as compared to \$0.32 in the egg flocks. This net stock income is the value of the poultry raised in excess of the cost of chicks and other stock bought. Notice that quantities of feed and labor per hen are higher in the combination egg and meat flock, as are total income, costs, and average farm income.

Earnings. Farm income in the egg and meat combinations varied from a low of \$1.08 per hen in 1940 to a high of \$4.55 in 1945, and averaged \$2.59 for the ten years. This is more per hen than for the strictly egg flocks, but represents more business. A man cannot care for as many hens.

Comparison of Egg and Combined Enterprises

Using data from table 2, earnings from a man-year of labor may be computed for comparison.

In egg flocks, requiring 1.8 hours per hen, one man could care for about 1,600 hens in 2,920 hours, or 365 eight-hour days. At the ten-year average of \$2.02 a hen, net farm income could be \$3,232 a year.

In the combination flock, requiring 3.2 hours per hen, one man could care for 910 hens plus the young meat birds. At \$2.59 a hen, net farm income would be \$2,356. These figures may indicate the reason most California poultrymen stress commercial egg production.

Actually there is no clean-cut division between the two types of enterprises. Most of the egg men in recent years have been buying baby pullets for raising replacements so have sold very little poultry meat except cull hens. However, some purchase straight-run chicks and sell the cockerels for meat, and occasionally put in an additional brood or two for meat. Also the combination man may vary his operations at times by raising fewer meat birds and concentrating more on eggs.

The figures in table 2 are probably from better-than-average poultrymen. In no year since 1925, when records were started, was there an average minus net farm income for all records, although there were minus management incomes for the three years, 1931 to 1933. But these averages do not show the range in individual flocks. In every year some records show a minus management income or loss, and in most years a very few show a minus net farm income.

Success of a poultry enterprise is a matter of individual management and perhaps some luck. Our observations lead us to say that the best poultrymen show a profit every year, the average have a profit in good years and a loss in bad—perhaps just make their wages and in-

Table 3. POULTRY MEAT STUDY RECORD AVERAGES

	Orange County		Los Angeles County 1947
	1939	1940	
Average number of birds raised per flock.....	10,065	11,424	15,990
Per cent mortality.....	16.1	11.6	11.2
Average weight per bird sold, pounds.....	2.8	3.2	3.4
Average price per bird.....	\$.54	\$.63	\$ 1.29
Pounds of feed per pound poultry produced.....	4.2	4.2	4.4
Cost of feed per hundred pounds.....	\$ 2.08	\$ 2.07	\$ 4.96
Hours of labor per bird raised.....	.25	.27	.14
Average value per hour of labor.....	\$.32	\$.31	\$.77
Cost per pound poultry produced			
Feed.....	8.9c	8.9c	21.9c
Labor.....	2.9	2.6	3.3
Fuel and miscellaneous.....	.5	.6	1.3
Depreciation.....	.4	.4	.7
Interest.....	.5	.4	.8
Chick cost.....	4.6	3.9	5.7
Total cost.....	17.8	16.8	33.7
Less miscellaneous income.....	.4	.7	.9
Net cost per pound poultry produced.....	17.4	16.1	32.8
Average value per pound produced.....	18.9	19.6	38.1
Management income per pound.....	1.5	3.5	5.3
Farm income per pound.....	3.4	5.7	8.9

Source: Poultry Meat Production Studies conducted by the Agricultural Extension Service. The Orange County study contained 6 records and the 1947 study in Los Angeles County covered 9 records.

terest over a long period of years, and poor poultrymen show a loss practically every year as long as they remain in the business.

Chicken Meat Enterprises

Specialized meat production has been a less stable business over the years than the other two types of enterprise. There have been times when the price of fryers or broilers scarcely covered the feed cost, and production had to be discontinued. With adequate finances and proper management, this enterprise should be suc-

cessful in the future. California is a growing market for poultry meat. Much is now shipped in from the middle west.

Most meat producers specialize in raising heavy breed or cross-bred chicks to the fryer stage of around 3½ pounds. However, since it became possible to sort day-old chicks as to sex, egg producers now use the day-old pullets for replacements, making available to meat producers the day-old Leghorn cockerels at a much lower cost than straight-run chicks. These cockerels are raised to the broiler stage of about 2 pounds.

Studies of poultry meat enterprises are summarized in table 3.

Hours of labor per bird raised in 1947 were .14. Hence in 2,920 hours with continuous year-round operation, a man should be able to raise around 20,000 birds, or 64,000 pounds of meat a year.

Size of Business

Any chicken business must be large enough to produce the desired income. If it is a side line to supplement income from a pension, a small orchard, or a part-time job, it need not be as big as if it must provide a complete family living.

Egg Farm

A minimum of 2,000 hens is recommended for a commercial egg farm that is the main support of a California family. It is a mistake to start with inadequate capital on a much smaller scale in the hope of expanding to adequate size from future earnings. If the enterprise is too small, there will not be enough surplus over operating and living costs for extra buildings and more stock.

A good commercial egg flock should produce an average net income over the years of \$1.50 a hen under current and near-future conditions, as compared to \$1 in the 1930's. Hence 1,000 well-managed hens should provide a \$1,500 income—some years more, some less.

A goal of \$2,000 prewar, or \$3,000 now, for family living calls for a commercial egg flock averaging about 2,000 hens. One man with a little help from his wife or children can do practically all the work.

Meat Farm

The same necessity of adequate size applies to a fryer farm. Do not count on more than 15 cents a bird or 5 cents a pound of net farm income. Hence, a net income of \$3,000 a year means raising about 20,000 birds or 60,000 pounds a year. The standard in table 7 is an illustration based on raising 17,000 birds from 20,000 baby chicks started.

At 8.7 cents a pound farm income, this would have meant a total net farm income of \$5,500 in 1947.

For comparison, the commercial egg man, making a net farm income of \$2.81 per hen in 1947, would have made \$5,600 on 2,000 hens.

Combination Farm

A combination of hens for egg production and fryers from heavy breeds can be in any proportion of the one-man units described above. But heavy hens and chicks require a little more space and more feed per bird than Leghorns do, so 10,000 chicks brooded and an average of 800 heavy hens for the year would utilize the available space and operator's labor on the chicken farm illustrated in figure 1, page 10. Our calculations show the combination would not be as profitable as commercial egg production with a lighter breed, except when production of fryers and heavy hens is exceptionally profitable because of high meat prices, or when direct retail selling is done, and perhaps also when hatching eggs are sold.

Advantages of the Two-Man Farm

The advantages of a larger chicken business should not be overlooked in planning the future chicken farm. The 365-day-a-year routine is confining. Yet a single worker can handle twice the birds on an emergency basis for a short while. A two-man egg farm of 4,000 to 6,000 hens provides not only a living for two families but also an opportunity for vacations and relief in case of sickness. The larger business also justifies better equipment and larger-scale buying and sometimes grinding, mixing, and storing of feed. An owner and hired worker or father-and-son partnership can result in a more profitable and pleasant business. So it might be well to get a farm or piece of land permitting future expansion.

Planning Your Farm

Successful commercial chicken enterprises can be located in practically any part of California. It is best, however, to avoid the handicap of excessive transportation costs on eggs and feed. A location near a good local market or one of the large consuming centers usually entails high land costs, but always insures access to market outlets. But a location in the path of a growing city should be avoided because of the risk of being forced out. Most commercial chicken farms are located within a radius of 60 miles around large consuming centers, such as Los Angeles, San Francisco, Sacramento, Stockton, Fresno, and San Diego. In more distant locations, egg and poultry prices are usually lower to the extent of shipping costs to the larger markets and sometimes feed costs are higher. There are local areas, however, where eggs and poultry are shipped in where production is profitable. It is well to locate in an area where there are good feed distributors and egg and poultry marketing agencies, such as branches of one of the poultry coöperatives which cover most of the commercial poultry districts. Patronage dividends of coöperatives sometimes provide quite a little additional income.

Climate. Insofar as production efficiency is concerned, the year-around climate is not an important factor in selecting a location. There are successful enterprises and districts over a wide range of climatic zones in California—from the cool coastal region through interior valleys with hot summers to the mountains with severe winters, and from the dry desert region in the southeast to the high rainfall region in the northwest. With housing and other facilities suited to the climate, the chickens will be all right. The operator should consider climate more from the standpoint of where he would prefer to live and work.

Land. The amount of land required for a specialized poultry enterprise is small

and its quality is unimportant, except that it should be well drained. Land near a city is higher in price than farther out but has advantages of lower hauling costs. It is important to be on an electric power line to have electricity for lights in the laying houses to lengthen winter days. It is not so important to be on a gas main although gas is usually a cheaper fuel for brooding than electricity or tank gas. The water supply need not be large, but it must be adequate and dependable. A good well with enough water for chickens, green feed, and family garden and dwelling is essential.

Space Requirements

The poultry farm capacity should be based on 3.5 square feet, including brooder pens, per average hen of the Leghorn breed, and 4.5 square feet per bird of the heavy breeds.

Adequate feeding space is an important consideration. At least 6 inches of usable hopper space per hen at all times should be provided. A hopper 5 feet long, usable on both sides, would provide 10 feet of feeding space, enough for 20 hens.

An egg enterprise averaging 2,000 hens may require floor space for 2,800 in the fall months after replacements are made.

Table 4 gives floor space recommendations to cover a number of conditions.

Location. In California, shelter for protection from rain and heat is a requirement in chicken and egg production. Sunlight, ventilation, and good work arrangements are important.

A shed-roof type of poultry house 18 or 20 feet wide and of varying length is widely used and is satisfactory in any section of California. The front is open for sunlight and ventilation, but can be closed against driving rains. A south facing is preferred since it admits maximum sun in the winter and minimum in the summer. Other facings to fit the terrain or locality are satisfactory.

Suggested Layout for a Commercial

The 2,000-hen commercial egg farm is suggested as the most suitable goal for the farmer who is in the chicken business to make a living. Over the years with good management it will provide as much net income and gainful employment as any other enterprise of similar size and investment.

Buildings. The commercial egg farm illustrated has 6,912 square feet of pen space in three houses, about 2.7 square feet per hen at the maximum of 2,800 hens, or 3.5 square feet per average hen for the year.

The layout has three chicken houses each 18' x 140'. Each chicken house con-

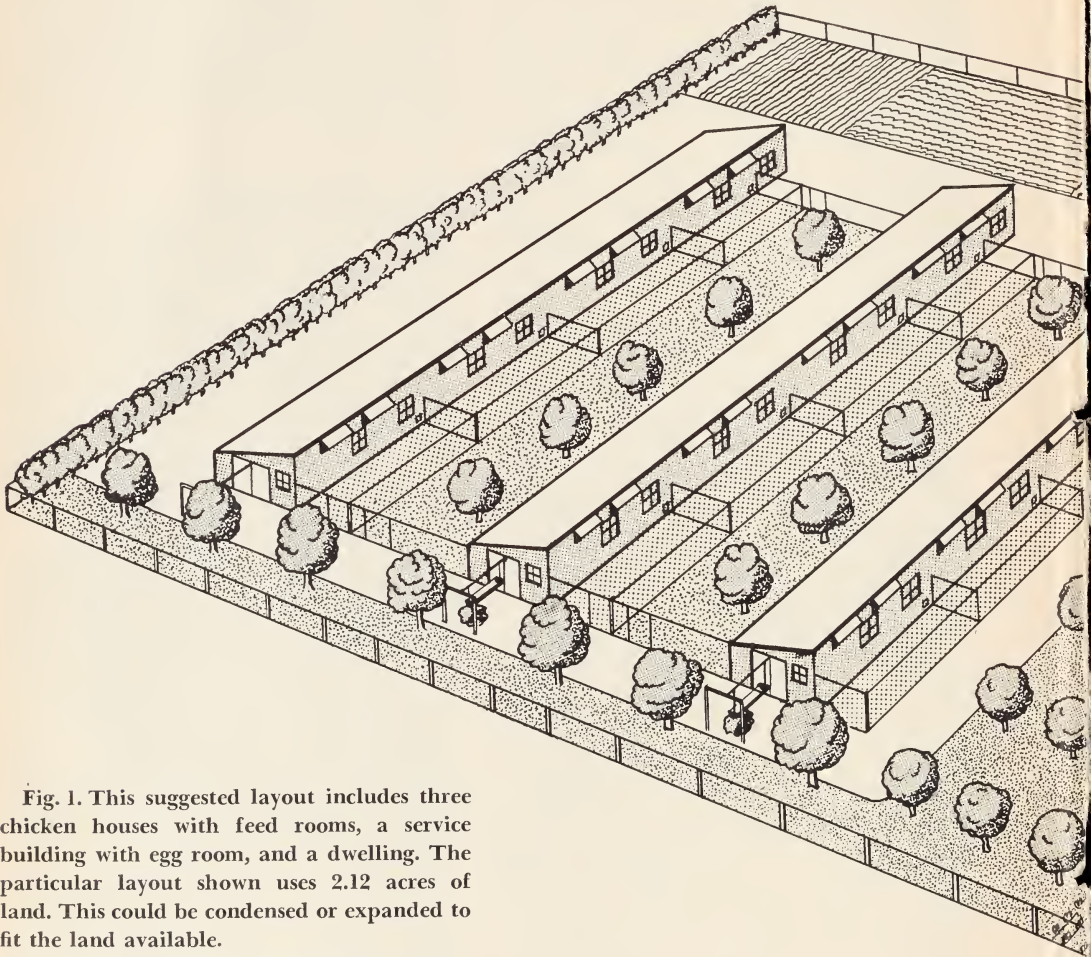


Fig. 1. This suggested layout includes three chicken houses with feed rooms, a service building with egg room, and a dwelling. The particular layout shown uses 2.12 acres of land. This could be condensed or expanded to fit the land available.

This layout should be considered an example and not a universal recommendation, since sizes of pens and houses and their arrangement should be varied to fit the size and shape of the particular farm.

Egg Farm

tains four pens each $18' \times 32'$, a feed room $12' \times 18'$, and has a 12-foot concrete yard along the front of the pens. The chicken house nearest the dwelling is equipped for brooding and would be used each spring for the brooding of replacements.

The suggested plan includes a 'service building $20' \times 50'$. This allows for a two-car garage, a shop and storage room $18'$

$\times 20'$, an insulated egg room $12' \times 14'$, and the pressure water system in a room $6' \times 12'$.

Possible Adaptation. The commercial egg farm layout, illustrated in figure 1, could be used for fryer and broiler production by brooding in two of the houses. About 20,000 chicks started in eight broods (every six weeks) could be raised in this plant. An advantage of using an egg farm for fryer production would lie in ease of shifting to egg production when fryers were less profitable.

There is a great variation in the size and type of fryer-broiler enterprises. Many start with a few battery brooders in a garage or small building; and if suc-

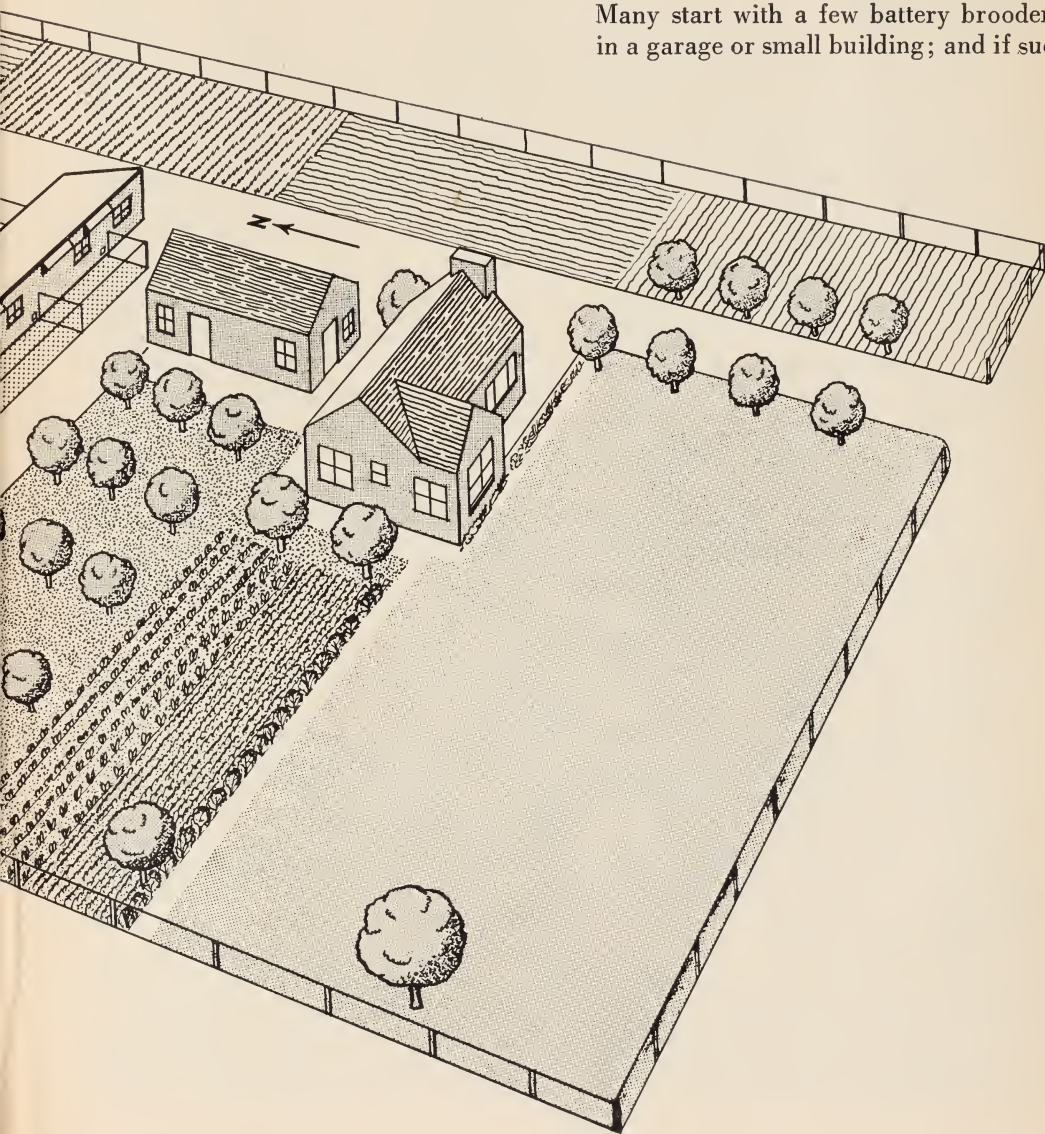


Table 4. POULTRY FARM FLOOR SPACE RECOMMENDATIONS

Battery floor space		On the floor with small yards					Feed hopper space per bird
Age in weeks	Sq. ft. per bird	Leghorns			Heavy breeds		
		Age in weeks	Sq. ft. per bird	Pen capacity 18' × 20'	Sq. ft. per bird	Pen capacity 18' × 20'	
0-1	.06	0-6	.5	720	.6	600	2"
2-3	.13						
4-5	.17	7-12	.8	450	1.0	360	4"
6-7	.25						
8-9	.31	13-18	1.4	260	1.8	200	6"
10-12	.42						
12	.52	19-24	2.0	180	2.5	144	6"
Individual cages							
Hens	1.5	25 & over	2.5	144	3.5	103	6"

cessful, expand with additional batteries and rearing units. Whether to brood and rear on the floor in large units, or in the smaller wire-bottom batteries, is a choice which depends most upon personal likes and dislikes. Good facilities would require about the same investment under either system, and floor brooding and rearing might require a little less labor.

Equipment. Considerable equipment is needed for the efficient handling of chickens. In addition to the usual required facilities such as brooders, hoppers and fountains, the following items will prove extremely useful in any commercial farm:

An overhead track and carrier, for carrying litter and feed into the house and taking eggs out.

Lights with a time switch, for a longer winter day in the laying houses.

Hand cart for moving feed or chickens and eggs between buildings.

Pickup truck, or larger motor truck, justifiable on most chicken farms for hauling feed and supplies to the farm and eggs and poultry to market.

Cost. The probable current investment represented by the commercial egg farm in our sample layout is shown in table 5. In figuring the original cost of this

layout assumed unit costs were: for poultry houses, \$1.25 a square foot; for service building, \$2.00; and for the dwelling, \$6.00. This is somewhat less than current high construction costs, but above prewar. Only under the most favorable circumstances could buildings be constructed for these costs today. Yet a much greater investment is scarcely justified.

The "average value" column in the table is figured at one half the original cost for the items: poultry buildings and improvements, poultry equipment, and dwelling and personal facilities, because during its useful life a facility is assumed to decline in value through depreciation from cost to zero.

Investment in the standard, or example, layout can be compared with the actual investment average from poultry management study records for 1947.

Replacement Cycle

Poultry management studies show high culling and replacement, with a resulting high proportion of pullets, to be the most profitable. The studies over the years have also shown spring-hatched replacements to be more profitable than fall-hatched.

For a 2,000-hen flock we suggest the annual brooding of 2,400 baby pullets

about March 1. These should furnish 1,800 good six-months-old pullets about September 1. Such birds will lay heavily during their first year. They should be culled constantly and heavily and be reduced to about 900 by the following September. These may be held a few months into their second production year until sold in February to make room for chicks.

This brooding once a year with proper culling and sale of birds will result in a plant comfortably filled to capacity the year around. Most eggs will be laid in the fall and winter when egg prices are highest, and production per average hen will be higher than when replacement pullets are raised in both spring and fall. Brooding at any other time of year does not result in such high flock production or average egg price, and is seldom justified except in heavy egg and meat flocks, and to keep individual cages filled to capacity.

Green Feed Production

Production of fresh green feed is recommended where space and water are available on the poultry farm. A quantity up to 20 per cent of the weight of

the total mash and grain can be utilized advantageously. It furnishes certain essential vitamins and other nutritional requirements. Estimates of cost of growing and harvesting indicate that it is as economical as the purchased feed replaced. Ladino clover and alfalfa are the best sources of fresh greens during the long, hot, dry summers, but their production requires frequent irrigation. An acre of either crop on good soil will produce 40,000 pounds or more during the growing season from March to November—an ample amount for a flock of 2,000 hens during this period. Winter greens can be produced from barley, wheat, chard, kale or other annual crops. Space around and between houses can be so utilized and some of the greens pastured off by using temporary fences to confine the birds to the desired area. When developing a new poultry farm, try to provide from one half acre to one acre of green feed land for the one-man unit, as pictured in figure 1. Where fresh greens are not practicable the need may be met by alfalfa meal in the mashes. A large proportion of the chickens in California are raised without fresh greens.

Table 5. INVESTMENT, COMMERCIAL EGG FARMS

	Estimated investment for suggested layout			Actual investment, 1947 management studies
	2,000-hen farm		Average value per hen	Average value per hen
	Original cost	Average value		
Land (standard 2.12 acres at \$500) . . .	\$ 1,060	\$ 1,060	\$ 0.53	\$ 0.32
Poultry buildings and improvements..	13,020	6,510	3.26	2.23
Poultry equipment	3,250	1,625	.81	.49
Feed and supplies	800	800	.40	.45
Poultry stock	3,500	3,500	1.75	1.58
Total poultry enterprise	21,630	13,495	6.75	5.07
Dwelling and personal facilities	7,000	3,500	1.75	....
Grand total	28,630	16,995	8.50	....

Table 6. A STANDARD OF INPUTS AND COSTS FOR COMMERCIAL EGG PRODUCTION

	Quantity		Unit price	Value of eggs		
	2,000-hen flock	Per hen		2,000 hens	Per hen	Per dozen
			dollars	dollars	dollars	cents
Stock and miscellaneous income						
Cull hens sold	1,525	.76	.70	1,067	.53	.....
Cockerels and cull pullets sold	200	.10	.50	100	.05	.....
Less—baby pullets bought	2,400	1.20	.35	840	.42	.....
Net stock income		—34	.....	327	.16	.....
Sacks sold	2,000	1.0	.06	120	.06	.....
Manure and used litter, cu. ft.	3,500	1.7	.04	140	.07	.....
Total income not egg . . . . .		.....	.....	587	.29	2.0
Inputs and costs						
Mash, chick and laying	111,500 lb.	56 lb.	3.60	4,020	2.01	13.7
Grain	102,700	51	2.98	3,070	1.53	10.5
Subtotal mash and grain	214,200	107	3.31	7,090	3.54	24.2
Grit and shell	5,000	2.5	.....	66	.03	.2
Fresh greens—cost home grown	40,000	20.0	.....	50	.03	.2
Total feed cost . . . . .		.....	.....	7,206	3.60	24.6
Hired labor—extra help	200 hr.	.1	.80	160	.08	.5
Operator's and family labor	3,000	1.5	.80	2,400	1.20	8.2
Litter, shavings, straw, etc. . . . .		.....	.....	140	.07	.5
Electricity and brooder fuel . . . . .		.....	.....	115	.06	.4
Taxes \$150, fire insurance \$60 . . . . .		.....	.....	210	.11	.7
Vaccines and miscellaneous . . . . .		.....	.....	275	.14	.9
Pickup truck, cash expense	3,000 mi.	1.5	.06	195	.10	.7
Depreciation, poultry buildings and equipment . . . . .		.....	.....	650	.32	2.2
Interest on average investment at 5% . . . . .		.....	.....	675	.33	2.2
Total expense of production . . . . .		.....	.....	12,026	6.01	40.9
Less income not egg from above . . . . .		.....	.....	587	.29	2.0
Net cost of eggs . . . . .		.....	.....	11,439	5.72	38.9
Assumed income—eggs, 29,400 dozen; 14.7 dozen per hen . . . . .		.....	.....	12,025	6.01	40.9
Management income . . . . .		.....	.....	586	.29	2.0
Farm income . . . . .		.....	.....	3,661	1.83	12.4

Standards of Inputs and Costs

Chickens are pretty much alike, and under similar conditions will require the same space, labor, feed, and other expenditures from year to year. From records over the last twenty years a standard of inputs and costs has been developed for use in planning or comparing poultry enterprises.

The standard for egg production is given in table 6, and a standard for chicken meat production is given in table 7. These standards are sample calculations for use as a guide in estimating costs and net income for any place and time. You need only to substitute current or expected prices.

The following explanation of terms in the tables should be noted:

Input is something put into the enterprise such as feed and labor. The manager has some control over what he puts into a chicken business. Usually he profits most by getting his birds to eat as much as possible. Heavy feed consumption promotes heavy egg and meat production.

Depreciation and *interest* on investment at 5 per cent are based upon the average investments as shown in table 5.

Costs will vary with prices from year to year. Use this schedule as a guide and refigure it with prices prevalent at the time. In estimating future egg prices remember that the eggs sold will contain all sizes and grades, so they will average below the price of large first-quality eggs.

Standard for Egg Production

Table 6 is based on a Leghorn flock with facilities as shown in figure 1 and an average investment from table 5.

High efficiency is assumed with 1,800 6-month-old pullets added in the fall from 2,400 baby pullets. The sale of 176 eggs, or 14.7 dozen, per hen is the average for our records the last ten years, as shown in table 2. The above assumed egg price of 40.9 cents a dozen, and feed cost of \$3.31 per hundredweight gives a feed-egg

ratio of 8.1. This is slightly less favorable than the average for the last ten years, as shown in table 1.

Standard for Chicken Meat Production

Table 7 is based on raising 85 per cent of the chicks started to an average weight of 3.2 pounds. With the prices and costs assumed, net farm income for this plant would be comparable to, although a bit lower than, the example for egg production in table 6.

Combined Egg and Meat Production

It is possible to obtain a high egg production per average hen with some strains of heavy birds. But it takes more space and feed per hen and per dozen eggs, and more feed and time to bring a pullet into production. The eggs of most heavy breeds are not white and may not bring as high a price. To offset these handicaps the young heavy pullets after a few months of production bring a higher price than a cull Leghorn. They weigh 1 to 2 pounds more and bring about 5 to 8 cents a pound higher price. There is a year-round demand for hatching eggs of the meat breeds, so up to 30 per cent of the eggs produced in a heavy flock may often be sold as hatching eggs at a premium of 20 to 30 cents a dozen over market eggs. Utilization of brooding and rearing capacity with three or four broods enables the operator to market broilers and heavy fryers and roasters most of the time and practice strict selection of pullets for layers.

The proportion of egg and meat production will vary widely between operators and from year to year, therefore no attempt is made to provide a layout or standard of inputs and costs for a combination egg and meat farm. There are many records with good profits over the years on this type of enterprise, par-

**Table 7. A STANDARD OF INPUTS AND COSTS FOR BROILER-FRYER PRODUCTION (HEAVY BREEDS) (BASED ON 20,000 STARTED,
85 PER CENT OR 17,000 RAISED TO 3.2 POUNDS, OR 54,400 POUNDS TOTAL)**

	Quantity		Unit price	Value of meat birds		
	17,000 birds	Per bird sold		17,000 birds	Per bird sold	Per pound sold
Inputs and Costs			dollars	dollars	cents	cents
Mash—3.4 lbs. per lb. sold	184,960	11.8 lb.	3.70	6,844	40.3	12.6
Grain—1.0 lb. per lb. sold	54,400	3.2	3.00	1,632	9.6	3.0
Subtotal, mash and grain	239,360	15.0 lb.	....	8,476	49.9	15.6
Grit and other feeds	1,500	.1 lb.	1.35	20	.1	....
Green feed, home raised	34,000	2.0 lb.	....	50	.3	.1
Total feed cost	....	....	....	8,546	50.3	15.7
Hired labor	200	.01 hr.	.80	160	.9	.3
Operator's labor	2,550	.15	.80	2,040	12.0	3.7
Baby chicks and baby cockerels	20,000	1.18	.17	3,400	20.0	6.3
Fuel for brooding	....	....	....	187	1.1	.3
Litter	....	....	....	160	.9	.3
Miscellaneous, taxes, and insurance	....	....	....	300	1.8	.6
Auto expense	3,000	.17	.06	180	1.1	.3
Depreciation	....	....	....	600	3.5	1.1
Interest on investment at 5%	....	....	....	550	3.2	1.0
Total cost of production	....	....	....	16,123	94.8	29.6
Less miscellaneous income, sacks and manure	....	....	....	220	1.3	.4
Net cost of birds sold	....	....	....	15,903	93.5	29.2
Assumed income	....	....	....	16,320	96.0	30.0
Management income	....	....	....	417	2.5	0.8
Farm income	....	....	....	3,007	17.7	5.5

ticularly on a small or side-line scale, where most of the eggs and meat birds are sold locally at retail. There are combinations where one or two broods of meat birds are raised and sold in connection with a Leghorn commercial egg flock.

If the egg farm layout in figure 1 were used as a combination, about 10,000 chicks could be brooded and a laying flock of 800 heavy or 1,000 Leghorn hens could be maintained. On the average such an enterprise is likely to be less profitable than straight egg production.

Success Factors

To be successful in chicken farming over the years requires a good start with adequate capital on an adequate scale and then good management thereafter. It is important to get pullorum disease-free chicks from breeder-hatcherymen who

have stock of superior health and producing capacity. The poultryman's biggest expense item is for feed; hence, his greatest opportunity to reduce costs and improve profits is in wise feed buying of adequate yet economical mash and grains through the best channels and at the best time.

Low mortality in chicks and hens, and high production per bird in eggs or meat, are essential to profits. Positive sanitary and disease-control measures, such as vaccination, are necessary. Proper feeding and care are essential at all times. Also, constant and heavy culling is essential in an egg production flock. All these things call for technical information, physical skill, and industry. Good financial management—adequate record keeping and a balanced budget—is an aid to financial success and security.

Getting Started

Buy, Rent or Build

There are some advantages in building up your own new poultry plant on new land. More modern materials and design, better suitability to your needs, a new clean location of your choice, and the opportunity to do much of the construction yourself, all favor a new place. But it will take more time and probably cost more than the purchase of an existing idle plant that can be cleaned up and put in operation more quickly. The suitability of existing buildings on an old place and their condition should be carefully studied. If they have been idle for some time and are carefully cleaned before being put to use, the carryover of diseases and parasites can be minimized. The long waiting period before production can result in net income must be provided for under any method, as well as the probability that new construction or even rehabilitation of an old place will cost more than anticipated. One common miscon-

ception should be avoided, namely, that people with limited capital can start on a small scale and make enough to support themselves and expand their operations. It takes a considerable size of business to yield any profit, considerably more to make a living, and more yet to provide the surplus for additional capital outlay.

Renting. Some poultry farms are rented, usually because the owner cannot find a buyer. Rent is commonly paid in cash monthly with the tenant furnishing the stock and such equipment as is needed to supplement that going with the place. Where part of the net income must be paid as rent, the tenant or operator must either live on less net income or must have a larger business. A fair rental of a poultry farm should cover the owner's costs of taxes, insurance, repairs, depreciation and interest on his current investment. The example shown in figure 1 and table 5 at average value based on half the construction cost would have a value of land and buildings and part of the equip-

Table 8. MONTHLY INCOME, CASH EXPENSE AND NET CASH INCOME FOR STARTING A 2,000-HEN EGG FARM

Month	First year				Second year and thereafter			
	Av. no. of hens	Cash income	Cash expense	Net cash income		Av. no. of hens	Income	Cash expense
				Monthly	Accumulative			
January.....	.....	.....	\$1,183	\$ - 1,183	\$ -1,183	2,490	\$1,344	\$ 707
February.....	.....	.....	313	- 313	-1,496	2,080	1,426	560
March.....	.....	\$ 79	455	- 376	-1,872	1,820	923	1,464
April.....	.....	45	1,037	- 992	-2,864	1,780	868	767
May.....	.....	22	641	- 619	-3,483	1,530	1,119	774
June.....	.....	715	693	22	-3,461	1,365	718	715
July.....	1,900	656	656	0	-3,461	1,335	693	670
August.....	1,860	875	615	260	-3,201	1,100	851	636
September.....	1,820	997	652	345	-2,856	2,700	1,308	653
October.....	2,710	1,492	664	828	-2,028	2,640	1,396	654
November.....	2,680	1,736	668	1,068	- 960	2,610	1,465	647
December.....	2,650	1,555	770	785	- 175	2,550	1,375	746
Total.....	1,135*	\$8,172	\$8,347	\$ -175		2,000*	\$13,486	\$8,993
								\$4,493

* Average number of hens on annual basis.

ment of around \$12,000. A fair rent would be \$1,700 a year or 85 cents a hen capacity, dwelling included. The tenant would need enough capital to clean up, equip, stock the farm with poultry, pay rent, and to live for six months. With \$3,500 to raise the stock, \$900 for living, and \$850 rent for six months, this would come to around \$5,250. Special deals where the owner of a going concern furnishes the stock, operating capital and some supervision are very rare and usually limited to gradual ownership transfers, partnership and inheritance within family relationships.

Capital Required

To illustrate operating capital needs as a laying flock is developed, we have calculated monthly cash production expenses and income for starting a 2,000 hen flock. Feed price and other cost levels are as illustrated in the standard in table 6. The first year is based on the brooding of 2,400 baby pullets in January and 2,400 straight-run chicks in April in order to obtain 2,860 six-month pullets for egg production in the fall. The second year and thereafter is based upon the brooding of 2,400 baby pullets March 1. Table 8 shows the resulting figures. The cash expenses are just the poultry enterprise expenses and do not include living costs or wages for any labor or any debt or rent payments.

Under the conditions assumed as to prices, the net cash cost of raising pullets during the first six months was about \$3,500. This would be below the cost of buying good young layers but does not include depreciation on facilities or the value of the operator's labor. To this accumulative net cash outlay should be added the cost of living for the period plus any rent or installments on purchase debt. If minimum living costs were \$150 a month or \$900 for the six months, the minimum operating capital needed would be about \$4,500 without rent or debt payments.

These figures should not be taken too seriously since good production and prices are never stable in the poultry business. Your business might do a little better or much worse. It would be better to have \$6,000 to stock the place, in addition to purchase payments or rent for the first six months. Do not plan to repay much debt during the second six months because it is necessary to carry over some of the high fall earnings to cover the low-income and high-cost brooding period from March to August of the second year.

Credit. Poultry farming with a considerable investment in birds of short and uncertain life is difficult to finance on borrowed capital. Purchase credit is obtainable on the land and buildings. One lending institution will loan up to 65 per cent of the appraised normal or long-term value of land and buildings. But the long-time value of poultry farms reflects poultry earnings over the long term and is somewhat below current land and new building construction costs.

It is reasonable to suppose the farm in figure 1 would appraise at around \$11,000 and that a \$7,000 loan would be obtainable. A 20-year amortized loan at 4 per cent would call for annual installments of \$80.20 per \$1,000 or \$561.40 per year, about \$47 a month. This could be carried by the business but a \$7,000 loan is not much on a land purchase and construction cost of around \$24,000 at the original costs in table 5.

Additional credit for raising the first pullets would seldom be obtainable by the beginner. The established poultryman who has proved his ability can obtain credit for feed purchases or development of additional birds. The schedule of net cash income for the second year and thereafter shows a six-month period from March through August when operation and living costs must come from an operating capital reserve or short-term credit. But the beginner faces the necessity of having adequate capital to purchase his place and have enough operating capital

to stock it and to live until he is producing a substantial net cash income.

Obtaining Experience and Capital.

The man with no experience and little capital should consider working for wages on a successful poultry farm before going in business for himself. He must first find out that he really likes the business and is not allergic to the dust and feathers. He will learn much by doing and by observing. A considerable number of poultry hands are employed in major poultry districts and a good man might be able to get such a job even though inexperienced. Employment would be steady and perhaps pay enough to permit some savings toward increasing the capital for going in business.

Start with Chicks

To avoid diseases and parasites birds older than day-old chicks should never be brought on a clean poultry farm. This means the beginner should start with baby chicks or baby pullets and will need to wait six months before egg checks will cover the feed and other bills. Starting this way will cost little if any more than buying pullets already raised, and will insure better flock health and production than is ordinarily obtained with usual stock on a going poultry farm, where the common struggle against diseases and pests is already on. Starting with chicks also enables the poultryman constructing his buildings to start brooding in his first building and build up his flock as construction progresses.

When to Start. In poultry meat production which is continuous through the year, the start can be made as soon as facilities are ready. For commercial egg production, it is best to start in early

spring with the brooding of chicks so the pullets will come into production in the fall. Fall-hatched pullets are not as profitable as those hatched in the spring. They come into heavy production in the spring when egg prices are lowest and they lay more small and medium-sized eggs. By fall they lay fewer eggs. The spring-hatched pullet lays well in the fall when egg prices are higher and also lays good-sized eggs the following spring so is a more profitable bird. By proper planning and use of baby pullets for raising replacements, you can keep your houses filled the year around by spring brooding only. Try to time possession or construction to start raising early spring-hatched pullets; January to April is best. If the place is ready in the fall, raise a brood or two of chicks for meat before starting the layers the following spring.

Seek Technical Advice and Information

The Farm Advisor's office in each county is the place to go for sound practical advice, as well as printed information, to help get started in the chicken business. The Agricultural Extension office is the local office of the University of California and the United States Department of Agriculture.

Situation reports and forecasts for egg, poultry and feed prices are issued frequently by the Department of Agriculture, the California Crop and Livestock Reporting Service, and the College of Agriculture. These are usually available at the Agricultural Extension Service.

A number of publications of the university relate to the poultry business. These also can be obtained from the Farm Advisor.

Coöperative Extension work in Agriculture and Home Economics, College of Agriculture, University of California, and United States Department of Agriculture coöperating.

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